



## **NJPDES Compliance Sampling Inspection (CSI) Report: Sediment**

**Bayonne Dry Dock & Repair Corp.**

**Bayonne, New Jersey 07002**

**NJ 016 5808**

**October 16, 2018**

**Report Prepared by:**

Kathleen M. Foley  
Kathleen M. Foley, DESA-MAB-MOS

Date: 12/19/18

**Report Approved by:**

Darvene Adams  
Darvene Adams, Chief  
Monitoring Operations Section (MOS)

Date: 12/20/18

**BDD NJPDES SEDIMENT CSI REPORT****OBJECTIVE**

On October 16, 2018, at the request of DECA, a New Jersey Pollutant Discharge Elimination System (NJPDES) Compliance Sampling Inspection (CSI) was conducted of the Bayonne Dry Dock & Repair Corp facility's sediment in Bayonne, Hudson County, NJ. The objective of this CSI was to gather information necessary to evaluate the requirements and limitations of NJPDES Permit No. NJ 016 5808 and to assess migration of contaminants from the dry dock area into the Upper New York Harbor. The sample results will be used by EPA and NJDEP to assess the possible impacts to the waterway, for making recommendations for future Permit revisions, and for designing Harbor monitoring projects in the Ambient Monitoring Program, e.g., REMAP.

**KEY PARTICIPANTS**

Listed below are key inspection participants and contact information, grouped by organization.

**U.S. Environmental Protection Agency**

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Neal R. Johansen, Environmental Scientist (732)321-6691

**USEPA Dive Team**

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Stephen Blaze, ERT [blaze.stephen@epa.gov](mailto:blaze.stephen@epa.gov)

**Bayonne Dry Dock & Repair Corp.**

Kevin Sullivan, General Manager (201)823-9295 [ksullivan@bayonnedrydock.com](mailto:ksullivan@bayonnedrydock.com)

Christine Kretzmer, Malkin Environmental & Excavating, LLC, Wastewater Sampler

**FACILITY DESCRIPTION**

Bayonne Dry Dock & Repair Corp., hereinafter referred to as BDD, is engaged in large ship repair and refurbishment, typically for the military. It is located at 100 Military Ocean Terminal Dock Yard, also known as the Military Ocean Terminal at Bayonne (MOTBY) and began operations in 1997 when they took over the lease from the city of Bayonne. Prior to that, the site served as a U.S. Army Base for about 50 years beginning in 1942 before closing in the mid-1990s during a nationwide base realignment. In August 2010, the Port Authority of New York & New Jersey acquired 130 acres of the MOTBY property, including the dry dock. It is categorized under Standard Industrial Classification (SIC) 3731 for Ship Building and Repair and employs up to 180 personnel. Additional site history has been described in previous EPA reports.



### Process Information

BDD conducts repair and refurbishment of commercial and military ships' hulls' exteriors and propeller systems inside a graving dock. They perform contract work on ships such as the USS *Intrepid*. This can include emergency repairs, paint removal and repainting (with rust inhibitor and marine paint), ship customizations/overhauling, and routine maintenance. To perform work, they flood the dock, float the ship in, close the caisson door and pump out the water. The ship is then held up with blocks or other supports to allow for refurbishment operations. Repairs typically take about 3 months. All work is done in accordance with the standards of the American Bureau of Shipping, U.S. Coast Guard, Lloyd's Register and [Det Norske Veritas](#).

According to the BDD website, shops are run by craftsmen and include: Carpenter Shop, Electrical Shop, Machine Shop, Piping Shop, Plate Shop, Tail-shaft Shop, Rigging Shop, Sandblasting and Paint Shop. Various cranes (gantry and mobile) accommodate capacities of 40 tons and 64 tons, respectively. Also available are electrical and diesel pumps with 1,800 GPM capacity at 150 PSI. Sandblasting of marine paint and other refurbishment activities generate waste and debris which must be properly managed. The vast surface area of the operations requires strict cleaning, monitoring and BMPs. The work area, known as the graving dock, is 1092' x 148' x 35'. The wet berth is 1600' x 35'.

### Facility Self-Monitoring Information

Stormwater/Sediment Permit #NJ 016 5808: Issued 12/19/07 with EDP 3/1/08 and XDP 2/28/13

The NJDEP is currently reviewing and revising this permit and requested sampling by USEPA. The permittee had previously applied to the NJDEP Bureau of Nonpoint Pollution Control for a NJPDES permit renewal on 2/24/14. Although this permit was not yet renewed, it remains in effect until a renewed permit is issued by the NJDEP. This NJPDES permit regulates stormwater discharges and requires annual sediment monitoring at two locations, DSN 005A and DSN 006A, just beyond the caisson door, either with a 0.1 m<sup>2</sup> modified Van Veen sampler or SCUBA divers. The permittee contracts the professional dive service [Randive](#) Inc of New Jersey, which conducts their annual sampling between the months of June and September. Photos #1 and #2 below illustrate the area of these permitted sample locations.



**Photo #1: Main Area of Sediment Collection Activities (approx. 148' wide)**



**Photo #2: Permitted Sediment Sampling Locations – Provided by NJDEP**

## **EPA SAMPLING / INSPECTION ACTIVITIES**

### **Sampling Activities**

This Sediment CSI was previously announced and coordinated with the permittee in advance of the sampling event. A Sampling and Analysis Plan (SAP) was developed and approved October 3, 2018 by EPA management prior to this sampling event to be used in conjunction with the DESA-MAB Generic QAPP for NPDES Sampling. This plan called for six sample locations and included quality objectives and criteria. The Sample Location Map which shows the location of all six sample points collected during this event based upon the GPS data is included as Attachment #1.

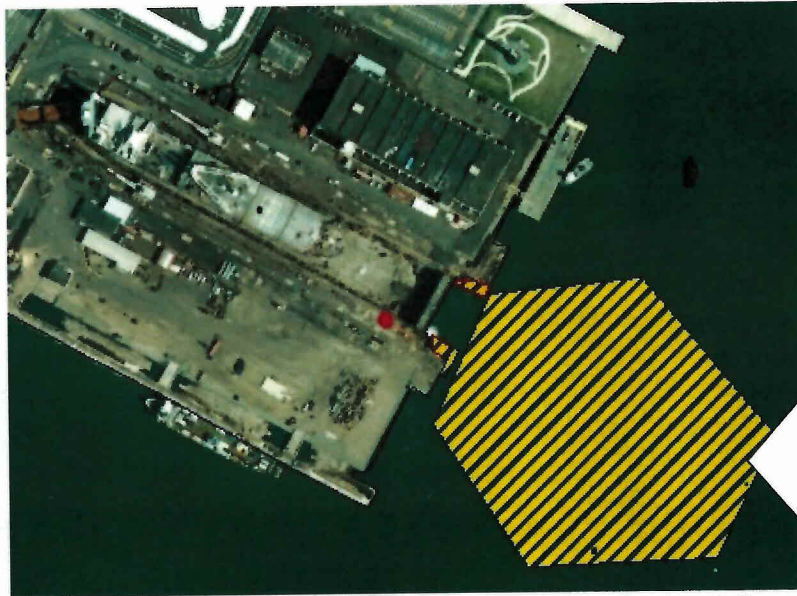
Sediment samples were collected by EPA Region 2/ERT Dive Team outside of the caisson door at the two permitted sample points shown in Photo #2.

- **DSN 005A** is located on the southern end directly below the treated sump pump wastewater discharge (DSN 001A) shown in Photo #1. It is 40' out (eastward) from the door and 50' northward of the bulkhead. This also aligns with the unpermitted discharge point for the main dewatering pump which is approximately 40' below DSN 001A.
- **DSN 006A** is located on the opposite end (northern end) of the caisson door. It is 40' out (eastward) from the door and 25' southward of the bulkhead.

Additional samples were collected around the permitted locations to monitor possible sediment drift and to account for prior dredging activities. For sample locations #115 (near 005A) and #116 (near 006A), the EPA diver attempted to determine areas of accumulated soft sediment in the depositional areas against the bulkheads which had not been removed by dredging or currents.

- The sediment drift sample (**DFT**) was collected along the southeastern edge of the bulkhead of the floating dock.
- A background sample (**EXT**) was collected further out from the caisson door in the area shown in Photo #3 (below).





As safety allows,  
collect "EXT" here.

**Photo #3: NJDEP Suggested Area for Collection of Background Sample ("EXT")**

Samples were collected by the lead diver by scooping the top 15 cm (six inches) depth using level A precleaned glass sample jars. One 8-oz jar was used to collect each sample. Prior to the diver descending, the jars were filled with DI water to allocate for pressure and vacuum when opening the empty jars below water. The depth to bottom ranged from approximately 20 feet at location #115 to 39 feet at location EXT.

Sampling support was provided by two NPDES Inspectors who remained on the vessel for sample processing and assistance. The contents/aliquots were homogenized in a glass bowl where needed, and transferred to labeled, 4-oz jars for separate analyses and split samples for the permittee. The facility representative requested to receive split samples of only DSN 005A and DSN 006A.

Samples were collected and submitted for heavy metals including mercury (Hg) and total PCB's analysis. Tributyl tin was not analyzed, instead total tin was analyzed. Preservation was limited to being stored on ice. The chain-of-custody is attached as Attachment #2. No field testing or analyses were conducted on-site.

### **Deviations and/or Environmental Conditions**

Since the Permit allows use of a 0.1 m<sup>2</sup> modified Van Veen grab sampling device or collection via SCUBA divers, one deviation is the requirement for collection between June 1 and September 30. This deviation does not affect the sampling results, but, was included in the Permit to compensate for seasonal weather conditions.

The Dive Plan contained within the SAP specified that the two NJPDES-permitted locations would be the first two locations sampled. Sampling order was designed around efficiencies, tides and safety, selected by the lead diver. The order of sampling was 005, 115, DFT, EXT, 006, 116.

### Inspection Activities

A brief opening discussion with facility representative Kevin Sullivan occurred to confirm sample locations for the designated points 005A and 006A. Most of the pertinent communication had already occurred via email and phone. According to the SAP and Dive Plan, the two permitted locations would be confirmed with on-site facility personnel prior to sample collection. The EPA sampled at the locations based upon descriptions provided by the NJDEP Permit Writer and those provided in the Permit. There was some discrepancy with the locations described by the facility representatives. It was determined that the locations for 005A and 006A are as described on page 5 of this report, i.e., 40 feet off the caisson door (East) and 25' (006A) versus 50' (005A) off the bulkhead. Questions on from which bulkhead this distance was to be measured resulted from the non-uniform bulkhead (notched/segmented) most visible in Attachment #1.

### ANALYTICAL RESULTS

The analytical results from the sampling survey are presented in Tables 1-3. Table 1 presents the concentrations of all samples collected during this event, attempting to align the digits. The highest two results for each parameter are highlighted in boldfaced type. Refer to the attached Analytical Laboratory Report (Attachment #3) for details on various PCB Arochlors, as reporting limits for each arochlor may vary.

**Table 1: Bayonne Dry Dock & Repair Corp. - October 16, 2018 Sediment Sampling Results**

Parameter	Units	005A	006A	115	116	DFT	EXT
As	mg/kg dry	18.2 K	17.0	54.7	<b>98.7</b>	<b>102</b>	27.9
Cd	mg/kg dry	0.812	0.898	1.99	<b>3.08</b>	<b>3.47</b>	1.20
Cr	mg/kg dry	64.4	58.4	<b>99.6</b>	75.8	<b>94.0</b>	59.4
Cu	mg/kg dry	407	285	<b>2,130</b>	1,090	<b>1,540</b>	472
Ni	mg/kg dry	39.4	34.3	<b>88.8</b>	63.5	<b>91.9</b>	36.3
Pb	mg/kg dry	109	96.8	<b>296</b>	237	<b>328</b>	110
Ag	mg/kg dry	<b>1.19</b>	1.17	<b>1.32</b>	0.722	1.04	1.14
Tin	mg/kg dry	16.4	15.2	<b>60.4</b>	46.7	<b>63.1</b>	19.1
Zinc	mg/kg dry	496	324	<b>2,400</b>	1,500	<b>2,760</b>	524
Mercury	mg/kg dry	<b>0.682</b>	<b>0.732</b>	0.568	0.380	0.672	0.590
PCBs	ug/kg dry	U (<108)	U (<99.6)	<b>99.2</b>	U (<77.6)	<b>99.3</b>	U (<77.6)

K = Result may be biased high. The actual value is expected to be less than the reported value.  
The highest two results for each parameter are **boldfaced** type.

### FINDINGS

#### Sampling Result Findings

Table 1 data can be used to identify the top two locations with the highest concentration found. Sample locations 115 and DFT show the highest concentrations of the samples collected.



Table 2 presents in a simplified table, the NOAA risk screening levels for ERL and ERM, i.e., effects ranges – low and median, and sample results from the EPA Region 2's REMAP historical sample from a 2013 survey conducted post-Superstorm Sandy of the sediment in the New York Harbor having a sampling location closest to BDD, i.e., UH458. Sample location UH458 is depicted on the map attached as Attachment #4 and is located just north of BDD. Although the UH458 data are in ug/g, this concentration is equivalent to mg/kg as both are in dry weight basis. The DESA Lab's reporting limits (RLs) are also included for reference. NOAA's screening levels are compiled into tables known as SQiRTs™. These were last updated in 2008 and are included in Tables 2 and 3.

**Table 2: Comparability and Sensitivity of Methods and Data**

Analyte	Lab Reporting Limit (mg/kg)	NOAA ERL* (mg/kg)	NOAA ERM* (mg/kg)	UH 458 (ug/g)
As	0.8	8.2	70	8.2
Cd	0.3	1.2	9.6	0.5
Cr	0.5	81	370	50.3
Cu	1	34	270	30.7
Ni	2	20.9	51.6	18.4
Pb	0.8	46.7	218	47.6
Ag	0.5	1.0	3.7	1.0
Tin	1	n/a	n/a	n/a
Zinc	2	150	410	85
Mercury	0.01	0.15	0.71	0.48
PCBs, Total	31.25 ug/kg/arochlor	0.0227	0.180	n/a

\*From NOAA SQiRTs™ = Screening Quick Reference Tables

UH458 data are in ug/g, but as a concentration, it is equivalent to mg/kg

Table 3 compares the analytical results from Table 1 with screening levels from NOAA SQiRTs™ ERL and ERMs and with the REMAP UH458 sample data, which may simulate another background sample for this area. These ERL and ERM levels do not constitute criteria or clean-up levels but were developed for screening purposes only. An excerpt from NOAA SQiRTs™ is provided below:

From NOAA SQiRTs™ - Screening Quick Reference Tables

Sediment quality benchmarks have been derived in a variety of ways for varying predictive goals. They are not interchangeable, nor should they be applied without a reasonable understanding of their development, their performance, and their limitations. For sediment-associated contaminants, dry weight concentrations are screened against published sediment quality benchmarks. The Effects Range-Low (ERLs) and Effects Range-Median (ERMs) are based upon similar data compilations but use different calculations.

- The ERL is calculated as the lower 10<sup>th</sup> percentile concentration of the available sediment toxicity data which has been screened for only those samples which were identified as toxic by original investigators. It is not an LC<sub>10</sub>. Since the ERL is at the low end of a range of levels at which effects were observed in the studies compiled, it represents the value at which *toxicity may begin to be observed in sensitive species*.
- The ERM is simply *the median concentration of the compilation of just toxic samples*. It is not an LC<sub>50</sub>.

**Table #3: Comparison of Metals Results with Screening Levels & Historical Data (mg/kg dry)**

	As	Cd	Cr	Cu	Ni	Pb	Ag	Sn	Zn	Hg
<b>005A</b>	<i>18.2</i>	.812	64.4	<b>407</b>	<i>39.4</i>	<i>109</i>	<i>1.19</i>	16.4	<b>496</b>	<i>0.682</i>
<b>115</b>	<i>54.7</i>	<i>1.99</i>	<i>99.6</i>	<b>2130</b>	<b>88.8</b>	<b>296</b>	<i>1.32</i>	60.4	<b>2,400</b>	<i>0.568</i>
<b>006A</b>	<i>17.0</i>	.898	58.4	<b>285</b>	<i>34.3</i>	<i>96.8</i>	<i>1.17</i>	15.2	324	<b>0.732</b>
<b>116</b>	<b>98.7</b>	<i>3.08</i>	<i>75.8</i>	<b>1090</b>	<b>63.5</b>	<b>237</b>	0.722	46.7	<b>1,500</b>	<i>0.380</i>
<b>DFT</b>	<b>102</b>	<i>3.47</i>	<i>94.0</i>	<b>1540</b>	<b>91.9</b>	<b>328</b>	<i>1.04</i>	63.1	<b>2,760</b>	<i>0.672</i>
<b>EXT</b>	<i>27.9</i>	1.20	54.0	<b>472</b>	<i>36.3</i>	<i>110</i>	<i>1.14</i>	19.1	<b>524</b>	<i>0.590</i>
<b>UH458</b>	8.2	0.5	50.3	30.7	18.4	<i>47.6</i>	1.0	n/a	85	<i>0.48</i>
<b>ERL</b>	8.2	1.2	81	34	30.9	46.7	1.0	n/a	150	0.15
<b>ERM</b>	70	9.6	370	279	51.6	218	3.7	n/a	410	0.71
	>ERM	>ERL	>ERL	>ERM	>ERM	>ERM	>ERL	N.R.	>ERM	>ERM

Results in *italics* exceed ERLResults in **boldfaced** exceed ERM (and ERL) N.R. = no reference

Interpretation of Table 3 indicates the effects of dredging, as the concentrations of heavy metals in the sediment are highest up against the bulkheads. Because the samples were collected by scooping the top layer of soft sediment with a jar from an uncontrolled environment, no definitive conclusions can be made due to the amount of large vessel traffic around this area and the unpredictable sediment load deposited from contributing tributaries, streams and rivers.

Since there are no permit limits for the two permitted sample locations, data generated from this survey can be used to compare against historical facility data and other Harbor sediment data, such as REMAP, which has been conducting periodic studies of the NY/NJ Harbor since 1993.

The EPA analytical results obtained during this inspection show all locations as exceeding at least one of the ERLs. All samples exceeded the ERL for Mercury. UH458 had values equal to the ERL for Arsenic and Silver.

**005A** had the second highest concentration for Silver and Mercury. It exceeded most parameters for ERL (except Cd and Cr) and exceeded ERM for Copper and Zinc.

**006A** had the lowest concentration of the metals monitored yet had the highest mercury concentration. It exceeded most parameters for ERL (except Cr) and exceeded ERM for Copper and Mercury.

**115** showed considerably higher values than 005A and most values were in the top two highest concentration category (boldfaced). It exceeded all parameters for ERL and exceeded ERM for Copper, Nickel, Lead and Zinc.

**116** had the second highest for Arsenic and Cadmium. It exceeded most parameters for ERL (except Cr) and exceeded ERM for Arsenic, Copper, Lead, Nickel, and Zinc.

**DFT** had the highest Arsenic, Cadmium, Lead, Nickel, Tin, Zinc, and PCBs. It exceeded all parameters for ERL and exceeded ERM for Arsenic, Copper, Nickel, Lead and Zinc.

**EXT** had considerably higher values than UH458. It exceeded most parameters for ERL (except Cd and Cr) and exceeded ERM for Copper and Zinc.



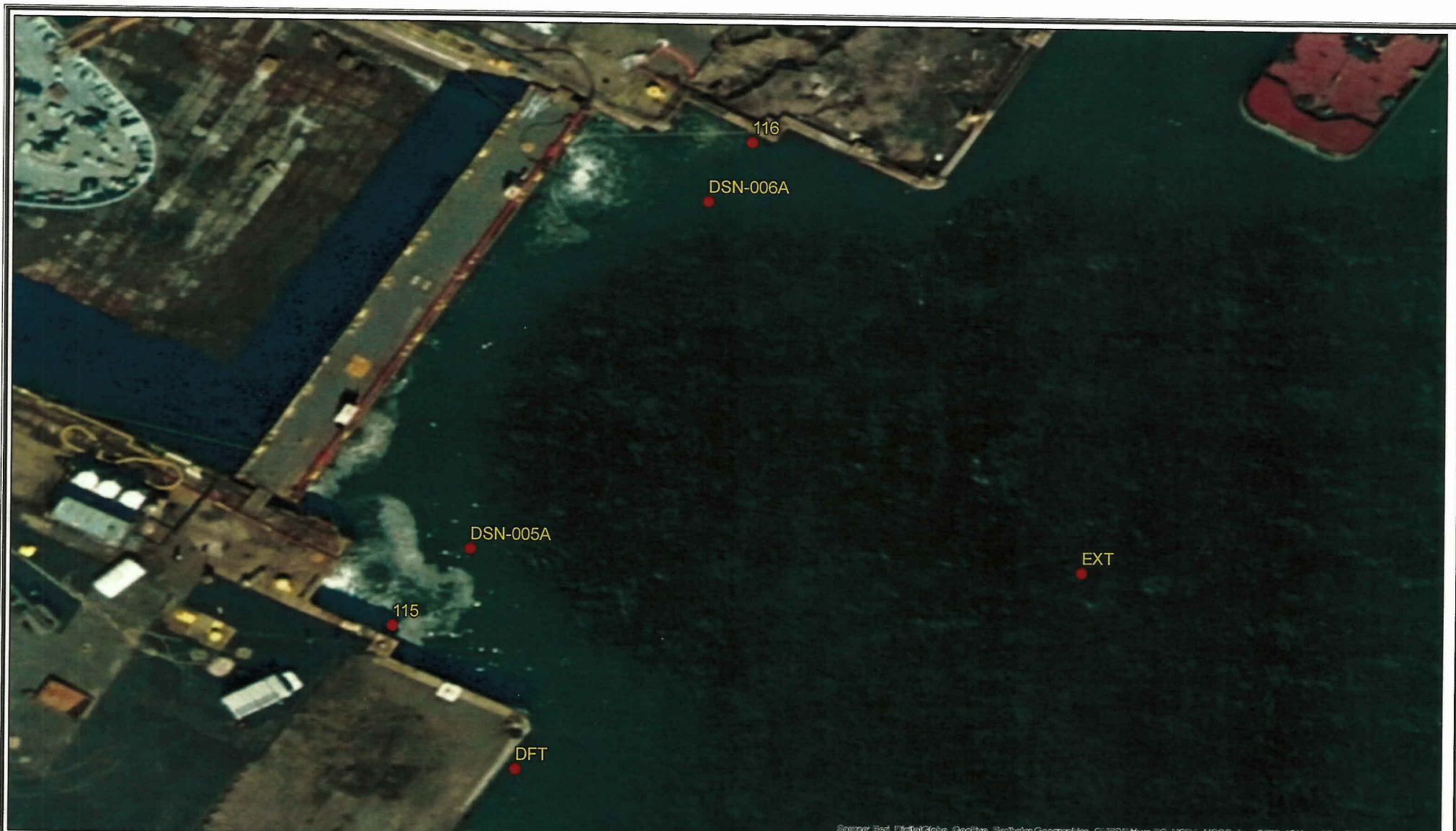
**Inspection Findings**

The EPA representatives did not disembark onto BDD property, aside from tending to the dock lines, so no true inspection occurred. There was a discrepancy on the exact locations for monitoring DSN 005A and 006A among facility representatives and the EPA. There was some discrepancy with the locations described by the facility representatives. It was determined that the locations for 005A and 006A are as described on page 5 of this report, i.e., 40 feet off the caisson door (East) and 25' vs 50' off the bulkhead. Questions on which bulkhead this distance was to be measure from resulted from the non-uniform bulkhead (segmented).

The exact locations should be determined and agreed upon with NJDEP and appropriately marked for easy identification. Refer also to Photo #2 provided by the NJDEP.

**ATTACHMENTS**

1. Figure 1 - Sample Location Map for October 16, 2018 Sediment Survey
2. Field Sample Chain-of-Custody Form (2 pp)
3. EPA Laboratory Report (10 pp)
4. REMAP 2013 Sample Location Map: New York's Upper Harbor (Post-Superstorm Sandy)



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNR/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Document Name: Bayonne Dry Dock Dive Sampling  
Map Creation Date: 10/17/2018  
Coordinate System: GCS WGS 1984  
Datum: WGS 1984  
Units: Degree



0 10 20 40 60 80 Feet

**U.S. Environmental Protection Agency  
Environmental Response Team  
Edison, New Jersey**

**Figure 1  
Diver Sediment Sample Locations  
Bayonne Dry Dock  
Bayonne, NJ**

Attachment #1: BDD Sediment Sampling Points



US EPA REGION 2 LABORATORY  
CHAIN OF CUSTODY/ FIELD DATA FORM

Page 1 of 2 pages

SURVEY NAME & LOCALITY BDD Sediment

PROGRAM: SF ☐ :

SITE ID \_\_\_\_\_

OPERABLE UNIT \_\_\_\_\_

PROJECT LEADER Foley

PROGRAM RESULTS CODE \_\_\_\_\_

Decision

Unit Code Y206

RCRA ☐  
D210

RCRA ENF ☐  
D307

NPDES ☒  
B304

SDWA ☐  
C215

AM ☐  
B224

CAA ☐  
A305

TSCA ☐  
L306

OD ☐  
B253

FIFRA ☐

CRIMINAL ENF ☐

Permit #: NJ0165808

LAB ID/ FIELD ID

CONTAINERS  
# OF

MATRIX

CHECK IF  
SPLIT  
SAMPLE

DESCRIPTION & INSTRUCTIONS INCLUDING LOCATION,  
ESTIMATED CONCENTRATIONS, SPECIAL REPORTING  
LIMITS,

Res CL  
Checked

Preservative  
(circle)

Collection Time  
(24hr clock)  
Begin End

Collection  
Date  
mm/dd/yy

BDD Sediment 005	1	D	<input checked="" type="checkbox"/>	4 oz glass for Metals/Hg	<input type="checkbox"/> 012345678910		1400	10/16/18
" "	2	D	<input checked="" type="checkbox"/>	" " " PCB's	<input type="checkbox"/> 012345678910		"	"
BDD Sediment 006	1	D	<input checked="" type="checkbox"/>	" " " "	<input type="checkbox"/> 012345678910		1615	"
" "	1	D	<input checked="" type="checkbox"/>	" " " Metals/Hg	<input type="checkbox"/> 012345678910		"	"
BDD Sediment 115	1	D	<input type="checkbox"/>	" " " " "	<input type="checkbox"/> 012345678910		1415	"
" "	1	D	<input type="checkbox"/>	" " " PCB's	<input type="checkbox"/> 012345678910		"	"
BDD Sediment 116	1	D	<input type="checkbox"/>	" " " "	<input type="checkbox"/> 012345678910		1620	"
" "	1	D	<input type="checkbox"/>	" " " Metals/Hg	<input type="checkbox"/> 012345678910		"	"
BDD Sediment EXT	1	D	<input type="checkbox"/>	" " " " "	<input type="checkbox"/> 012345678910		1500	"
" "	1	D	<input type="checkbox"/>	" " " PCB's	<input type="checkbox"/> 012345678910		"	"

COMMENTS & SPECIAL REQUIREMENTS:

Preservative Added & Checked  
0=ice 7=FAS  
1=H2SO4 pH<2 8=ZnAc  
2=HNO3 pH<2 9=NaOH pH>12  
3=HCl pH<2 10=NH4Cl  
4=Na2S2O3  
5=NaOH pH>9  
6=Ascorbic Acid

Time

Date

Person Assuming Responsibility for Sample(s):

Relinquished By:

Received By:

Relinquished By:

Received By:

Matrix:  
A=aqueous F=multiphasic  
B=aqueous (chlorinated) G=solvent  
C=soil H=biota  
D=sediment I=oil  
E=sludge J=other

Survey Complete? Y ☒ N ☐

Direct from sampling cloth, collected 10/16/18

revised 10/25/2004

Attachment #2: C&C - BDD P. 1 of 2



US EPA REGION 2 LABORATORY  
CHAIN OF CUSTODY/ FIELD DATA FORM

Page 2 of 2 pages

SURVEY NAME & LOCALITY BDD Sediment

PROGRAM: SF ☐ :

SITE ID \_\_\_\_\_

OPERABLE UNIT \_\_\_\_\_

PROJECT LEADER Foley

PROGRAM RESULTS CODE \_\_\_\_\_

Decision

RCRA ☐

RCRA ENF ☐

NPDES ☒

SDWA ☐

AM ☐

CAA ☐

TSCA ☐

OD ☐

FIFRA ☐

CRIMINAL ENF ☐

Unit Code Y206

D210

D307

B304

C215

B224

A305

L306

B253

Permit #:

NJ 016 5808

CONTERS  
# OF

MATRIX

CHECK IF  
SPLIT  
SAMPLE

DESCRIPTION & INSTRUCTIONS INCLUDING LOCATION,  
ESTIMATED CONCENTRATIONS, SPECIAL REPORTING  
LIMITS.

Res CL  
Checked

Preservative  
(circle)

Collection Time  
(24hr clock)

Collection  
Date

Begin End

mm/dd/yy

LAB ID/ FIELD ID

BDD Sediment DFT	1 D	<input type="checkbox"/>	4 oz glass jar for Metals/Hg	<input type="checkbox"/> 012345678910	1	1435	10/16/18
"	1 D	<input type="checkbox"/>	" " " " PCB's	<input type="checkbox"/> 012345678910	"	"	"
		<input type="checkbox"/>		<input type="checkbox"/> 012345678910			
		<input type="checkbox"/>		<input type="checkbox"/> 012345678910			
		<input type="checkbox"/>		<input type="checkbox"/> 012345678910			
		<input type="checkbox"/>		<input type="checkbox"/> 012345678910			
		<input type="checkbox"/>		<input type="checkbox"/> 012345678910			
		<input type="checkbox"/>		<input type="checkbox"/> 012345678910			
		<input type="checkbox"/>		<input type="checkbox"/> 012345678910			
		<input type="checkbox"/>		<input type="checkbox"/> 012345678910			
		<input type="checkbox"/>		<input type="checkbox"/> 012345678910			

COMMENTS & SPECIAL REQUIREMENTS:

Preservative Added & Checked

0=ice 7=FAS  
1=H2SO4 pH<2 8=ZnAc  
2=HNO3 pH<2 9=NaOH pH>12  
3=HCl pH<2 10=NH4Cl  
4=Na2S2O3  
5=NaOH pH>9  
6=Ascorbic Acid

Time

Date

Person Assuming Responsibility for Sample(s):

Kathleen Foley

Received By:

[Signature]

Received By:

[Signature]

Received By:

[Signature]

1625

10/17/18

1450

10/17/18

Matrix:

A=aqueous F=multiphasic  
B=aqueous (chlorinated) G=solvent  
C=soil H=biota  
D=sediment I=oil  
E=sludge J=other

Relinquished By:

Kathleen Foley

Relinquished By:

[Signature]

Relinquished By:

[Signature]

Survey Complete? Y ☒ N ☐



Attachment #3: Laboratory Analytical  
Report (10 pp)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory  
2890 Woodbridge Avenue  
Edison, New Jersey 08837  
732-906-6886 Phone  
732-906-6165 Fax

November 16, 2018

Philip Cocuzza  
Monitoring & Assessment Branch  
DESA/MAB  
Edison, NJ 08837

RE: Bayonne Dry Dock(Sediment) - 1809016

Enclosed are the results of analyses for samples received by the laboratory on 10/17/2018. The signature below reflects the laboratory's approval of the reported results. If you have any questions concerning this report, please refer to Project Number 1809016 and contact the laboratory.

Sincerely,

A handwritten signature in black ink, which appears to read "John R. Bourbon", is located below the word "Sincerely,".

John R. Bourbon  
Chief, DESA/LB



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region 2 Laboratory

**Final Report**

**Project: Bayonne Dry Dock(Sediment) - 1809016**

**Project Number: 1809016**

**Project Narrative:**

The National Environmental Laboratory Accreditation Conference Institute (TNI) is a voluntary environmental laboratory accreditation association of State and Federal agencies. TNI established and promoted a National Environmental Laboratory Accreditation Program (NELAP) that provides a uniform set of standards for the generation of environmental data that are of known and defensible quality. The EPA Region 2 Laboratory is NELAP accredited. The Laboratory tests that are accredited have met all the requirements established under the TNI Standards.

**Condition Comments**

None

**Comment(s):**

The "Sample Analysis Date and Time" is included in the results section for any analyte with a prescribed holding time of 72 hours or less.

**Data Qualifier(s):**

- U- The analyte was not detected at or above the Reporting Limit.
- J- The identification of the analyte is acceptable; the reported value is an estimate.
- K- The identification of the analyte is acceptable; the reported value may be biased high.
- L- The identification of the analyte is acceptable; the reported value may be biased low.
- NJ- There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.

**Reporting Limit(s):**

The Laboratory was able to achieve the appropriate limits for each analyte requested.





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SUMMARY REPORT FOR SAMPLES

Field ID	Laboratory ID	Matrix	Date Sampled	Date Received
BDD Sediment 005	1809016-01	Solid	10/16/2018 14:00	10/17/2018 14:50
BDD Sediment 006	1809016-02	Solid	10/16/2018 16:15	10/17/2018 14:50
BDD Sediment 115	1809016-03	Solid	10/16/2018 14:15	10/17/2018 14:50
BDD Sediment 116	1809016-04	Solid	10/16/2018 16:20	10/17/2018 14:50
BDD Sediment EXT	1809016-05	Solid	10/16/2018 15:00	10/17/2018 14:50
BDD Sediment DFT	1809016-06	Solid	10/16/2018 14:35	10/17/2018 14:50

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Project Number: 1809016

SUMMARY REPORT FOR METHODS

Analysis	Method	Certification	Matrix
608.3 PCB Aroclors TCL	EPA 608.3 SOP C-91 Rev 4.2		Solid
Mercury	EPA 245.1 SOP C-110 Rev 2.5	NELAP	Solid
Metals ICP TAL NPDES/DW	EPA 200.7 SOP C-109 Rev 3.4	NELAP	Solid





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Analyte	Result	Qualifier	Reporting Limit	Units	Date and Time of Analysis*
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Field ID: BDD Sediment 005

Sample ID: 1809016-01

PCB Aroclors GC

Aroclor 1016	---	U	108	ug/kg dry
Aroclor 1221	---	U	217	ug/kg dry
Aroclor 1232	---	U	108	ug/kg dry
Aroclor 1242	---	U	108	ug/kg dry
Aroclor 1248	---	U	108	ug/kg dry
Aroclor 1254	---	U	108	ug/kg dry
Aroclor 1260	---	U	108	ug/kg dry
Aroclor 1262	---	U	108	ug/kg dry
Aroclor 1268	---	U	108	ug/kg dry

Metals ICP

Arsenic	18.2	K	1.36	mg/kg dry
Cadmium	0.812		0.509	mg/kg dry
Chromium	64.4		0.848	mg/kg dry
Copper	407		1.70	mg/kg dry
Lead	109		1.36	mg/kg dry
Nickel	39.4		3.39	mg/kg dry
Silver	1.19		0.848	mg/kg dry
Tin	16.4		1.70	mg/kg dry
Zinc	496		3.39	mg/kg dry

Mercury CVAA

Mercury	0.682		0.0817	mg/kg dry
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Field ID: BDD Sediment 006

Sample ID: 1809016-02

PCB Aroclors GC

Aroclor 1016	---	U	99.6	ug/kg dry
Aroclor 1221	---	U	199	ug/kg dry
Aroclor 1232	---	U	99.6	ug/kg dry
Aroclor 1242	---	U	99.6	ug/kg dry

U.S.E.P.A Region 2 Laboratory

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Reported: 11/16/2018



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Project Number: 1809016

Analyte	Result	Qualifier	Reporting Limit	Units	Date and Time of Analysis*
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Field ID: BDD Sediment 006

Sample ID: 1809016-02

PCB Aroclors GC

Aroclor 1248	---	U	99.6	ug/kg dry
Aroclor 1254	---	U	99.6	ug/kg dry
Aroclor 1260	---	U	99.6	ug/kg dry
Aroclor 1262	---	U	99.6	ug/kg dry
Aroclor 1268	---	U	99.6	ug/kg dry

Metals ICP

Arsenic	17.0		1.29	mg/kg dry
Cadmium	0.898		0.484	mg/kg dry
Chromium	58.4		0.807	mg/kg dry
Copper	285		1.61	mg/kg dry
Lead	96.8		1.29	mg/kg dry
Nickel	34.3		3.23	mg/kg dry
Silver	1.17		0.807	mg/kg dry
Tin	15.2		1.61	mg/kg dry
Zinc	324		3.23	mg/kg dry

Mercury CVAA

Mercury	0.732		0.0747	mg/kg dry
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Field ID: BDD Sediment 115

Sample ID: 1809016-03

PCB Aroclors GC

Aroclor 1016	---	U	98.3	ug/kg dry
Aroclor 1221	---	U	197	ug/kg dry
Aroclor 1232	---	U	98.3	ug/kg dry
Aroclor 1242	---	U	98.3	ug/kg dry
Aroclor 1248	---	U	98.3	ug/kg dry
Aroclor 1254	---	U	98.3	ug/kg dry
Aroclor 1260	99.2		98.3	ug/kg dry

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Analyte	Result	Qualifier	Reporting Limit	Units	Date and Time of Analysis*
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Field ID: BDD Sediment 115

Sample ID: 1809016-03

PCB Aroclors GC

Aroclor 1262	---	U	98.3	ug/kg dry
Aroclor 1268	---	U	98.3	ug/kg dry

Metals ICP

Arsenic	54.7		1.27	mg/kg dry
Cadmium	1.99		0.475	mg/kg dry
Chromium	99.6		0.792	mg/kg dry
Copper	2130		1.58	mg/kg dry
Lead	296		1.27	mg/kg dry
Nickel	88.8		3.17	mg/kg dry
Silver	1.32		0.792	mg/kg dry
Tin	60.4		1.58	mg/kg dry
Zinc	2400		3.17	mg/kg dry

Mercury CVAA

Mercury	0.568		0.0757	mg/kg dry
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Field ID: BDD Sediment 116

Sample ID: 1809016-04

PCB Aroclors GC

Aroclor 1016	---	U	74.3	ug/kg dry
Aroclor 1221	---	U	149	ug/kg dry
Aroclor 1232	---	U	74.3	ug/kg dry
Aroclor 1242	---	U	74.3	ug/kg dry
Aroclor 1248	---	U	74.3	ug/kg dry
Aroclor 1254	---	U	74.3	ug/kg dry
Aroclor 1260	---	U	74.3	ug/kg dry
Aroclor 1262	---	U	74.3	ug/kg dry
Aroclor 1268	---	U	74.3	ug/kg dry

Metals ICP

U.S.E.P.A Region 2 Laboratory

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Analyte	Result	Qualifier	Reporting Limit	Units	Date and Time of Analysis*
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Field ID: BDD Sediment 116

Sample ID: 1809016-04

Metals ICP

Arsenic	98.7		0.989	mg/kg dry
Cadmium	3.08		0.371	mg/kg dry
Chromium	75.8		0.618	mg/kg dry
Copper	1090		1.24	mg/kg dry
Lead	237		0.989	mg/kg dry
Nickel	63.5		2.47	mg/kg dry
Silver	0.722		0.618	mg/kg dry
Tin	46.7		1.24	mg/kg dry
Zinc	1500		2.47	mg/kg dry

Mercury CVAA

Mercury	0.380		0.0585	mg/kg dry
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Field ID: BDD Sediment EXT

Sample ID: 1809016-05

PCB Aroclors GC

Aroclor 1016	---	U	77.6	ug/kg dry
Aroclor 1221	---	U	155	ug/kg dry
Aroclor 1232	---	U	77.6	ug/kg dry
Aroclor 1242	---	U	77.6	ug/kg dry
Aroclor 1248	---	U	77.6	ug/kg dry
Aroclor 1254	---	U	77.6	ug/kg dry
Aroclor 1260	---	U	77.6	ug/kg dry
Aroclor 1262	---	U	77.6	ug/kg dry
Aroclor 1268	---	U	77.6	ug/kg dry

Metals ICP

Arsenic	27.9		0.986	mg/kg dry
Cadmium	1.20		0.370	mg/kg dry
Chromium	59.4		0.616	mg/kg dry

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Analyte	Result	Qualifier	Reporting Limit	Units	Date and Time of Analysis*
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Field ID: BDD Sediment EXT

Sample ID: 1809016-05

Metals ICP

Copper	472		1.23	mg/kg dry	
Lead	110		0.986	mg/kg dry	
Nickel	36.3		2.47	mg/kg dry	
Silver	1.14		0.616	mg/kg dry	
Tin	19.1		1.23	mg/kg dry	
Zinc	524		2.47	mg/kg dry	

Mercury CVAA

Mercury	0.590		0.0568	mg/kg dry	
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Field ID: BDD Sediment DFT

Sample ID: 1809016-06

PCB Aroclors GC

Aroclor 1016	---	U	88.4	ug/kg dry	
Aroclor 1221	---	U	177	ug/kg dry	
Aroclor 1232	---	U	88.4	ug/kg dry	
Aroclor 1242	---	U	88.4	ug/kg dry	
Aroclor 1248	---	U	88.4	ug/kg dry	
Aroclor 1254	---	U	88.4	ug/kg dry	
Aroclor 1260	99.3		88.4	ug/kg dry	
Aroclor 1262	---	U	88.4	ug/kg dry	
Aroclor 1268	---	U	88.4	ug/kg dry	

Metals ICP

Arsenic	102		1.16	mg/kg dry	
Cadmium	3.47		0.436	mg/kg dry	
Chromium	94.0		0.726	mg/kg dry	
Copper	1540		1.45	mg/kg dry	
Lead	328		1.16	mg/kg dry	
Nickel	91.9		2.90	mg/kg dry	

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Project Number: 1809016

Analyte	Result	Qualifier	Reporting Limit	Units	Date and Time of Analysis*
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Field ID: BDD Sediment DFT

Sample ID: 1809016-06

Metals ICP

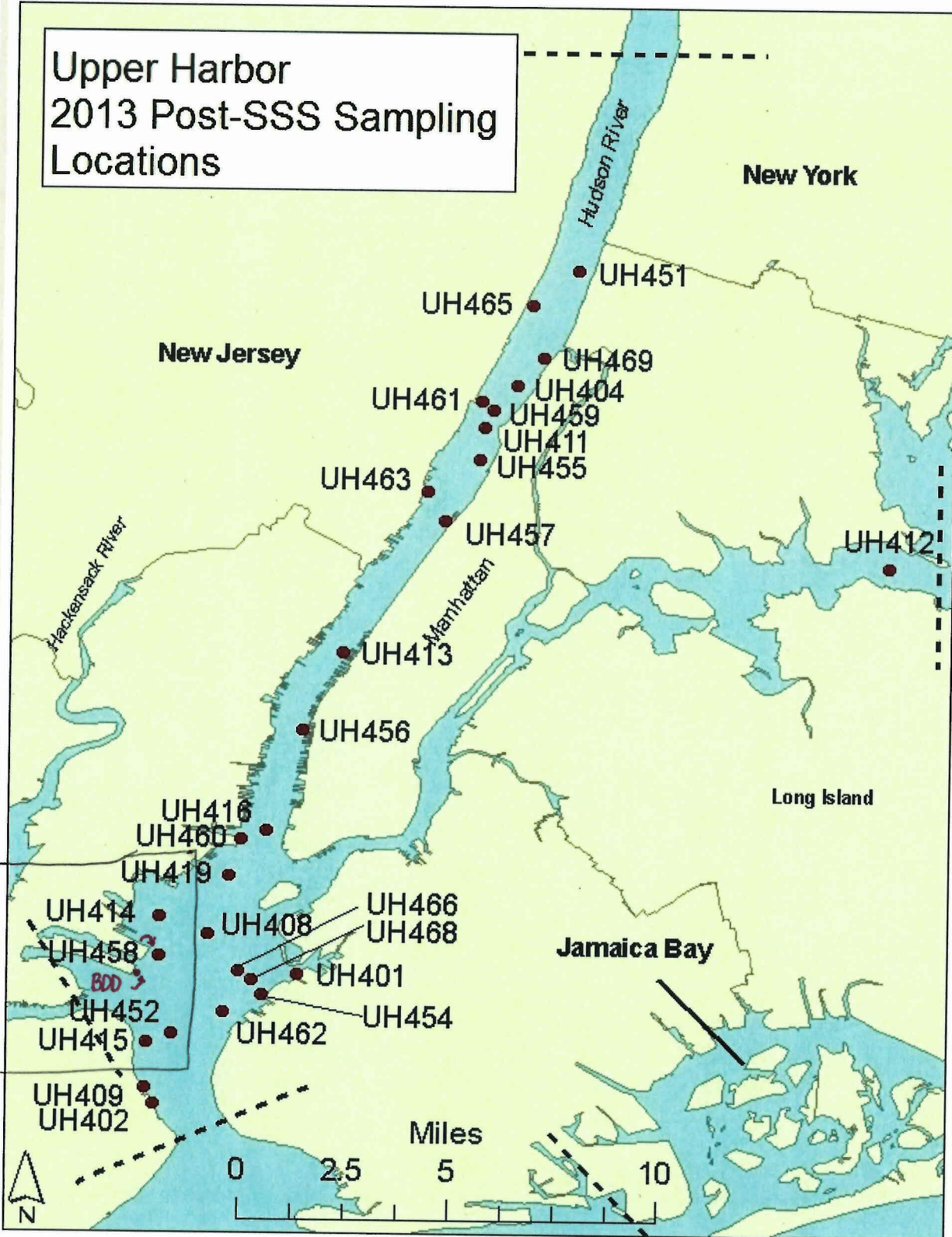
Silver	1.04		0.726	mg/kg dry	
Tin	63.1		1.45	mg/kg dry	
Zinc	2760		2.90	mg/kg dry	

Mercury CVAA

Mercury	0.672		0.0653	mg/kg dry	
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# Upper Harbor 2013 Post-SSS Sampling Locations



US EPA Region 2  
Division of Environmental Science and Assessment

## Legend

• 2013 sampling station

Attachment #4: REMAP Sample Sites